



# MONTANA

## Forestry Best Management Practice (BMP) 2014 Monitoring Report

### *Executive Summary*

Montana's water quality protection program as it applies to forest management/timber harvest involves both a regulatory and a voluntary approach. Since the 1970's, non-regulatory Forestry Best Management Practices (BMPs) have provided guidance on water quality protection standards for harvest and other types of operations. At the same time, concern over impacts of forest management on Montana's watersheds prompted the 1987 Montana Legislature to pass House Joint Resolution 49. This resolution directed the Montana Environmental Quality Council (EQC) to study "how current forest management practices are affecting watersheds in Montana." The EQC established a Forestry BMP technical committee that developed Montana's first statewide forestry BMPs in 1987. In 1989 an interdisciplinary working group released the revised Forestry Best Management Practices we still use today.

That same year, the Montana Legislature enacted the BMP Notification Law (76-13-131 MCA), which requires private landowners to notify the Montana Department of Natural Resources and Conservation (DNRC) prior to harvesting timber. DNRC foresters provide information and private landowner technical assistance on proper harvest techniques and BMP implementation. Forest practices & harvesting are administered by the DNRC within a non-regulatory framework; public education is a main goal.



*Montana's Best Management Practices (BMPs)  
aim to protect watersheds and water quality.*

Since October 1991 the Streamside Management Zone (SMZ) Law has regulated forest practices along streams. This law implements suitable streamside management practices while providing for exceptions to the law if properly applied and approved by DNRC. The law also prohibits certain forest practices along streams. Additionally, the SMZ Rules became effective March 15, 1993, and were updated in 2006. They define and clarify the SMZ law and enforcement policies.

This BMP Field Review process has been developed to evaluate whether BMPs are effectively limiting non-point source pollution resulting from timber harvest operations in Montana. MT DNRC evaluates forest practices for BMP implementation every two years and reports the findings to the EQC. This report

summarizes the findings of the MT DNRC 2014 Forestry BMP Field Review cycle.

## THE FIELD REVIEW PROCESS

In 2014, three interdisciplinary teams were formed to conduct the reviews, covering the northwestern, the west, and the central/east regions of the state. Each team has up to eight members: fisheries biologist, forester, hydrologist, conservation organization, road engineer, soil scientist, non-industrial private forest landowner and/or logging professional. Additional observers always welcome. The landowner/logger being reviewed were both encouraged to attend. DNRC used established site selection criteria to select forty-two (42) new timber harvest sites harvested since 2011. The teams evaluated a maximum of forty-nine (49) BMPs at each site, rating the application and effectiveness for each BMP on a five-point scale.



*BMP Field Review Team members evaluate a site.*

## APPLICATION & EFFECTIVENESS

All 42 review sites were evaluated for **BMP Application**. Results showed that across all ownerships, BMPs were properly applied 97% of the time. Although many harvest sites had at least one instance where a BMP was inadequately applied, a majority of the departures were minor and did not cause erosion or deliver material to a stream. Of all sites, 5% had one or more major BMP departures in application. In the 2012 reviews, 7% had major BMP departures in application.

The application of eight high risk BMPs were evaluated separately because these are among the most important for protecting soil and water resources. In 2014, these high risk BMPs were properly applied 92% of the time.

The field review teams also evaluated the same 42 sites for **BMP effectiveness**. Results showed that across all ownerships, BMPs were effective in protecting soil and water resources 98% of the time. Of the 42 sites, 31% had one or more minor departures in BMP effectiveness. This compares with 48% in 2012. Minor departures in effectiveness produce minor impacts to soil and water resources; for example: eroded material reaches a draw, but not a stream. Major departures for BMP effectiveness were found on 7% of the sites, compared to 12% in 2012. High risk BMPs were effective in providing adequate protection to soil and water resources 94% of the time.

As with previous cycles, the greatest frequency of departures from BMPs, and the most impacts, were associated with road maintenance and road surface drainage.

The field review teams also evaluated application and effectiveness of the Montana Streamside Management (SMZ) Law. Teams found 6 departures out of 264 ratings for application with 50% rated minor and 3 out of 264 ratings for effectiveness with 100% being rated minor.

***Table 1: Summary of the 2014 BMP/SMZ Application and Effectiveness by Ownership Group.***

Practice	DNRC	Federal	Industry	NIPF	Totals
BMP Application	99%	94%	98%	98%	97%
BMP Effectiveness	99%	96%	98%	99%	98%
SMZ Application	96%	100%	100%	95%	98%
SMZ Effectiveness	98%	100%	100%	99%	99%

## FIELD REVIEW OBJECTIVES

The BMP field reviews have been conducted every two years beginning in 1990; 2014 represents the thirteenth cycle. As with previous reviews, the 2014 objectives were to:

1. Determine if BMPs are being applied on timber harvest operations.
2. Evaluate the general effectiveness of BMPs in protecting soil and water resources.
3. Provide information on the implementation of the SMZ law and rules and assess general effectiveness in terms of protecting water quality.
4. Provide information to focus future educational or study efforts by identifying subjects and geographic areas in need of further attention or investigation.
5. Provide information on the need to revise, clarify, or strengthen BMPs.



*Across all ownerships, for 2014, BMPs were effective in protecting soil and water resources 98% of the time.*

## SAMPLE SIZE & DISTRIBUTION

The targeted 42 field review sites are distributed across the state by geographical region and land ownership group. The review process recognizes four ownership types: State of Montana lands, Federal lands, private industrial lands (Industry) and non-industrial private forest lands (NIPF). The basis for site distribution is

the proportion of the total statewide harvest volume that is harvested within each region by each ownership group for the latest year complete records are available.

*A total of 42 sites were reviewed during the 2014 BMP cycle. 11 (26%) were industry sites, 8 (19%) were State sites, 10 (24%) were federal sites, and 13 (31%) were NIPF sites.*

## SITE INSPECTIONS

The teams conducted the 2014 field reviews from late June through late August. During the on-site review, team members and landowner representatives meet at a central location prior to inspection. Teams and observers then travel to the site. When in the general area of the site, but before actually entering the road system to access the harvest area or the harvest area itself, the group stops to discuss the specifics of the review. The team leader provides maps and field review forms. There may be a landowner briefing to the team giving background information such as silvicultural prescription, season of operation, and associated practices. The final decisions as to which roads and harvest units will be reviewed are then made by the team. All decisions regarding what to review -- which roads, SMZs, new culvert installations and harvest units -- **are determined before the team enters the area.** Once on site, team members walk the site as a group and review BMP practices conducted in the predetermined areas. Teams typically spend about two hours inspecting each site. Before leaving the site, the team gathers to determine the official BMP ratings.



## RESULTS

Shown below are the results of the 2014 Field Reviews for proper **Application** and for **Effectiveness**. Streamside Management Zones (SMZ) were also rated in terms of application and effectiveness.

**Application of BMPs:** The application rating measures whether the BMP was applied, whether it was applied to the correct standards, the appropriate number of times and in the proper locations. Field review teams rated a total of 1,267 practices to assess how landowners and operators applied BMPs. They found 37 departures, 30 of which were given a rating of “3” (minor or temporary impacts), and 7 were rated a “2” (major temporary or minor prolonged impacts) and 0 ratings of 1 (major prolonged impacts). Table 2 illustrates the application of BMPs for all rated practices.

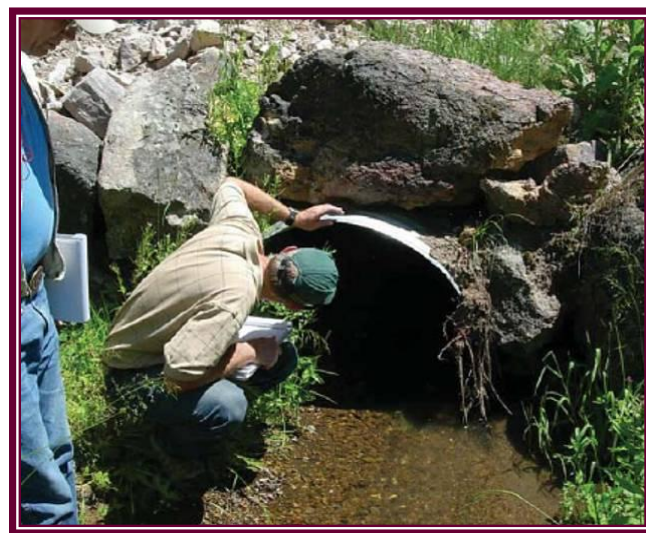
**Table 2: Application of BMPs to All Rated Practices by Ownership Group and Rating Category.**

Ownership Group	# Practices Rated	Percentage (%) of Practices Rated As			
		<i>Meet or Exceed</i>	<i>Minor Departures</i>	<i>Major Departures</i>	<i>Gross Neglect</i>
State	269	98.5%	1.5%	0%	0%
Federal	359	94.3%	3.9%	1.9%	0%
Industry	337	97.9%	2.1%	0%	0%
NIPF	300	98.3%	1.7%	0%	0%
All Sites	1,267	97.6%	2.1%	0.3%	0%

**Effectiveness of BMPs:** The effectiveness rating evaluates how well the applied BMP protected soil and water resources. In terms of impacts: of the 1,267 practices evaluated, there were 24 departures with impacts. These departures break down as 16 ratings of 3 (minor temporary impacts) and 8 ratings of 2 (major temporary or minor prolonged impacts), and 0 ratings of 1 (major prolonged impacts) as illustrated in Table 3.

**Table 3: Effectiveness of BMPs for All Rated Practices by Ownership Group and Rating Category**

Ownership Group	# Practices Rated	Percentage (%) of Practices Rated As			
		<i>Meet or Exceed</i>	<i>Minor Departures</i>	<i>Major Departures</i>	<i>Gross Neglect</i>
State	269	99.3%	0.7%	0%	0%
Federal	359	96.4%	1.7%	1.9%	0%
Industry	337	98.2%	1.5%	0.3%	0%
NIPF	300	99.0%	1.0%	0%	0%
All Sites	1,267	98.1%	1.3%	0.6%	0%



*A review team member inspects a culvert.*

**Streamside Management Zones:** The SMZ rating form used in 2014 rated the same 11 BMPs used in previous review cycles. The SMZ law and rules were applicable to 31 sites. SMZ rules were applied correctly 98% of the time. Teams found 6 departures out of 264 ratings for application with 50% rated minor and 3 out of 264 ratings for effectiveness with 100% of those being rated minor.

Table 4 illustrates SMZ departures by ownership group.

**Table 4: SMZ Departures by Ownership Group**

Ownership Group	Number of Sites Evaluated			Number of Sites with Departures			Total Number of Departures		
(year →)	'14	'12	'10	'14	'12	'10	'14	'12	'10
State	6	6	6	1	0	0	3	0	0
Federal	7	10	14	0	2	3	0	3	7
Industry	8	12	12	0	2	1	0	2	2
NIPF	9	9	5	2	3	1	6	6	1
All Sites	30	37	37	3	7	5	9	11	10

SMZ effectiveness was rated very high at 99% for all ownerships combined. Of the 264 SMZ evaluations, 261 provided adequate protection. All 3 departures were rated as “minor” with a score of “3” (Minor or Temporary impacts).

**SMZ impacts:** Departures covered SMZ width, equipment operation, pre-approved alternative practices, and reduction of leave trees below the minimum requirements.

**Fish Passage:** Fish passage for new culvert installations on fish streams was formally rated this year and the results included in the analysis. Only two sites qualified and of those one was good and one was rated slightly deficient in application but OK in effectiveness.

## CONCLUSIONS

### Application Ratings Across All Ownerships:

Of all practices rated, 97% were properly applied according to BMP standards. This percentage maintains the 2012 overall rating showing that the BMPs are maintaining a *very high* level of compliance. This high rating demonstrates the strong commitment all ownership groups have to proper forest management and to the protection of Montana’s water and forest resources.

### Effectiveness Ratings Across All

**Ownerships:** For all applied BMPs, 98% were shown to be effective for all types of natural resource impacts. This is on par with the overall effectiveness from 2012. Again, a very high standard is being maintained. The most frequent departures and impacts were associated with road maintenance and road surface drainage.

Combining application and effectiveness, including the SMZ ratings, the 2014 field reviews rated a total of 3,066 practices across all 42 reviewed sites. There are a combined total of 69 ratings with either a departure or an impact. **A departure and/or impact occurred approximately 2.2% of the time all practices rated.**

## COMPARISON TO BMP FIELD REVIEW RESULTS 1990 – 2014

Table 5 (back) shows conclusively that voluntary BMP implementation is working in Montana. A steady increase in proper application and effectiveness is evident from 1990 through 2000. Since 2000, the BMP reviews have shown a very high and sustained compliance rate. This success is a tribute to the continuing efforts of all landowners and loggers working in Montana’s forests.



*Continuing improvements in harvesting equipment have facilitated industry’s ability to meet or exceed the guidelines of Montana’s Best Management Practices.*

**TABLE 5: COMPARISON OF BMP FIELD REVIEW RESULTS 1994 – 2014**

<b>Category</b>	<b>2014</b>	<b>2012</b>	<b>2010</b>	<b>2008</b>	<b>2006</b>	<b>2004</b>	<b>2002</b>	<b>2000</b>	<b>1998</b>	<b>1996</b>	<b>1994</b>
Application of practices that meet or exceed BMP requirements.	<b>97%</b>	<b>98%</b>	<b>97%</b>	<b>97%</b>	<b>96%</b>	<b>97%</b>	<b>96%</b>	<b>96%</b>	<b>94%</b>	<b>92%</b>	<b>91%</b>
Application of high risk practices that meet or exceed BMP requirements.	<b>92%</b>	<b>93%</b>	<b>93%</b>	<b>90%</b>	<b>89%</b>	<b>89%</b>	<b>90%</b>	<b>92%</b>	<b>84%</b>	<b>81%</b>	<b>79%</b>
Number of sites with at least one major departure in BMP application.	<b>2 of 42 (5%)</b>	<b>3 of 42 (7%)</b>	<b>5 of 45 (11%)</b>	<b>8 of 42 (19%)</b>	<b>4 of 44 (9%)</b>	<b>5 of 39 (13%)</b>	<b>10 of 43 (23%)</b>	<b>4 of 42 (10%)</b>	<b>8 of 47 (17%)</b>	<b>12 of 44 (27%)</b>	<b>17 of 46 (37%)</b>
Average number of departures in BMP application, per site.	<b>0.86</b>	<b>0.76</b>	<b>0.87</b>	<b>1.19</b>	<b>1.52</b>	<b>1.30</b>	<b>1.80</b>	<b>1.40</b>	<b>2.00</b>	<b>3.00</b>	<b>3.90</b>
Percentage of practices providing adequate protection.	<b>98%</b>	<b>99%</b>	<b>98%</b>	<b>97%</b>	<b>97%</b>	<b>99%</b>	<b>97%</b>	<b>98%</b>	<b>96%</b>	<b>94%</b>	<b>93%</b>
Percentage of high risk practices providing adequate protection.	<b>94%</b>	<b>96%</b>	<b>96%</b>	<b>91%</b>	<b>92%</b>	<b>95%</b>	<b>92%</b>	<b>93%</b>	<b>89%</b>	<b>86%</b>	<b>83%</b>
Number of sites having at least one major / temporary or minor / prolonged impact.	<b>3 of 42 (7%)</b>	<b>5 of 42 (12%)</b>	<b>7 of 45 (16%)</b>	<b>8 of 42 (19%)</b>	<b>7 of 44 (16%)</b>	<b>10 of 39 (25%)</b>	<b>15 of 43 (35%)</b>	<b>9 of 42 (21%)</b>	<b>12 of 47 (26%)</b>	<b>15 of 44 (34%)</b>	<b>13 of 46 (28%)</b>
Average number of impacts per site.	<b>0.57</b>	<b>0.38</b>	<b>0.47</b>	<b>1.02</b>	<b>1.05</b>	<b>0.56</b>	<b>1.30</b>	<b>1.00</b>	<b>1.50</b>	<b>2.30</b>	<b>3.00</b>

The entire 2014 BMP Audit Report can be viewed online on the Montana DNRC Forest Practices website:  
<http://dnrc.mt.gov/forestry/assistance/practices/fpractices.asp>